36. Method for cryopreserving biological material comprising suspending said biological material in a vitrification solution , and directly contacting droplets of said suspension of biological material in vitrification solution, said droplets having an average volume not exceeding 10µl, with a substantially stationary solid surface having a heat conductivity of greater than about 10W/(m-k) at 20 °C and a temperature of from about -150 °C to about -180 °C, wherein said vitrification solution has a concentration of cryoprotectant sufficient so that the glass transition temperature of the vitrification solution is raised and the formation of ice in the contacting with said solid surface is prevented.

37. Method according to claim 36 wherein the biological material is a cell.

38. Method according to claim 36 wherein the biological material is an oocyte.

39. Method according to claim 36 wherein the biological material is an embryo.

40. Method for the vitrification of biological material comprising:

a) suspending the biological material in a cryoprotective equilibration solution having a concentration of cryoprotectant sufficient so that the glass transition temperature of the cryoprotective equilibration solution is raised sufficiently to inhibit the formation of ice;

b) rinsing the resultant equilibrated biological material with vitrification solution so as to incorporate said biological material in said vitrification solution wherein said vitrification solution has a concentration of cryoprotectant sufficient so that on cooling, the glass transition temperature of the vitrification solution is raised and the formation of ice is prevented; and

c) directly contacting microdroplets having an average volume not exceeding 10µl of said vitrification solution containing biological material with a substantially stationary solid surface having a heat conductivity of greater than about 10W/(m-k) at 20 °C and a temperature of about -150 °C to about -180°C.